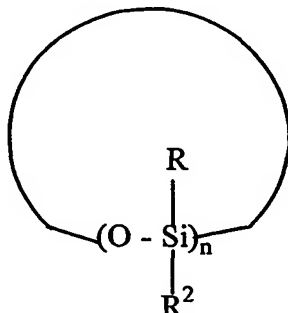


CLAIMS

We claim:

1. A poly(cyclosiloxane) network comprising the hydrosilation reaction product of:
a cyclosiloxane of the formula

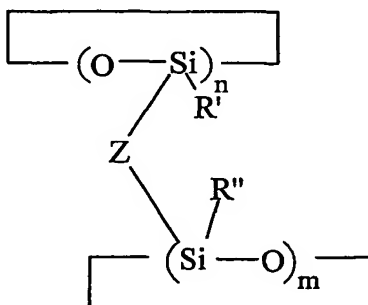


wherein R and R² are the same or different for each siloxane moiety and are selected from the group consisting of hydrogen, an alkyl group, an aryl group, and a cycloalkyl group, and wherein n is an integer from 3 to 8; and

moieties selected from the group consisting of linear silanols, branched silanols, halosilanes, alkoxysilanes, vinyl silanes, allyl silanes, vinyl siloxanes, and allyl siloxanes,

wherein the Si-O bonds of the cyclosiloxanes are substantially unrearranged compared to the cyclosiloxane precursors of the network.

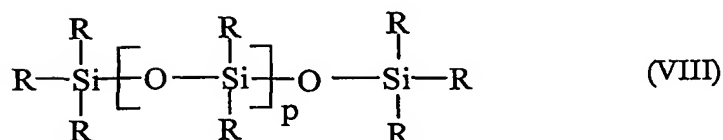
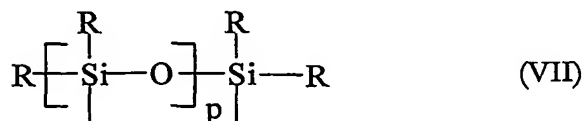
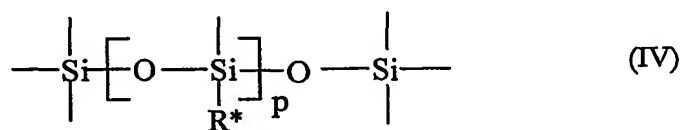
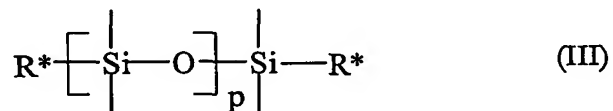
2. The cyclosiloxane network represented by the formula

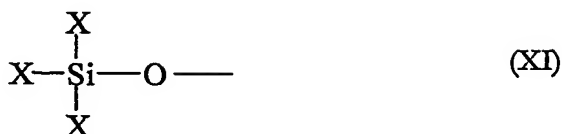
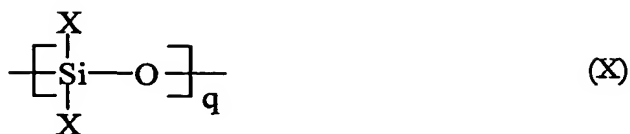
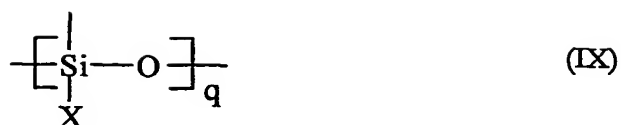


wherein n and m are independently integers between 3 and 8, R' and R'' are independently selected from the group consisting of hydrogen, an alkyl group, an aryl group, and a cycloalkyl group, each Z is independently selected from the group consisting of oxygen atoms and reacted moieties, wherein the moieties are selected from the group consisting of linear silanols, branched silanols, halosilanes, alkoxysilanes, vinyl silanes, allyl silanes, vinyl siloxanes, and allyl siloxanes, and wherein a majority of the siloxane moieties of the cyclosiloxane component are crosslinked

to siloxane moieties of adjacent cyclosiloxanes such that a majority of cyclosiloxanes are linked to multiple adjacent cyclosiloxanes.

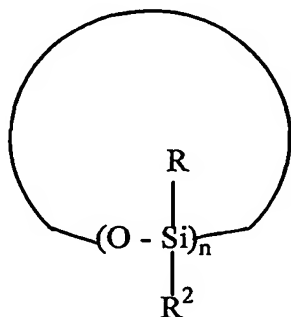
3. The poly(cyclosiloxane) network of claim 2, wherein R' and R'' are both CH₃.
4. The poly(cyclosiloxane) network of claim 1, wherein n=5.
5. The poly(cyclosiloxane) network of claim 1, wherein the molar ratio of cyclosiloxanes to reacted moieties is greater than 1:1.
6. The poly(cyclosiloxane) network of claim 1, wherein the crosslinking group has a formula selected from formulae III - XI





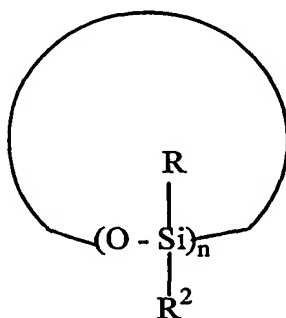
wherein p is 0-200, q is 1-100, R is a C₁-C₄ alkyl, R* is a vinyl, an allyl, a hydride, a hydroxyl, a halogen or a C₁-C₄ alkoxy, and X is a hydride, a hydroxyl, a halogen or a C₁-C₄ alkoxy.

7. The poly(cyclosiloxane) composition of claim 1, wherein the cyclosiloxane is selected from the group consisting of trimethylcyclotrisiloxane, tetramethycyclotetrasiloxane, hexamethylcyclohexasiloxane, heptamethylcycloheptasiloxane, and octakis(dimethylsiloxy)T8-silsesquioxane.
8. The poly(cyclosiloxane) composition of claim 1, wherein the cyclosiloxane is pentamethylcyclopentasiloxane and the crosslinking group is a dihydroxyhexasiloxane.
9. The poly(cyclosiloxane) composition of claim 1, wherein the cyclosiloxane of the formula

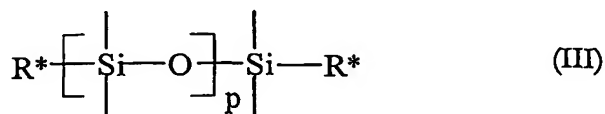


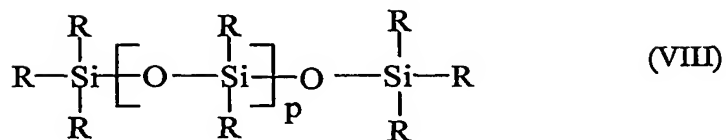
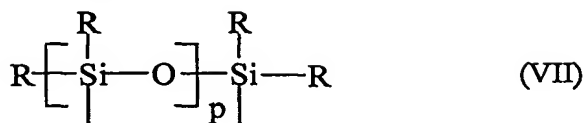
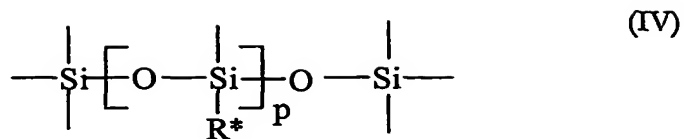
contains at least 2 Si-H bonds.

10. A process for the preparation of a poly(cyclosiloxane) network, the process comprising:
- providing a cyclosiloxane;
 - providing a crosslinking group selected from the group consisting of linear silanols, branched silanols, halosilanes, alkoxysilanes, vinyl silanes, allyl silanes, vinyl siloxanes, and allyl siloxanes;
 - contacting the cyclosiloxane and crosslinking group under condensation reaction conditions such that the crosslinking groups provide linkages between the cyclosiloxane moieties to form a poly(cyclosiloxane) network composition.
11. The process according to claim 10, wherein the cyclosiloxane has the formula



- wherein R and R² are the same or different for each cyclosiloxane and are selected from the group consisting of a hydrogen, an alkyl group, an aryl group, and a cycloalkyl group, and wherein n is an integer from 3 to 8.
12. The process of claim 10, wherein each cyclosiloxane contains at least 2 Si-H bonds.
13. The process of claim 10, wherein R is CH₃.
14. The process of claim 11, wherein n=5.
15. The process of claim 10, wherein the crosslinking group has a formula selected from formulae III - XI





wherein p is 0-200, q is 1-100, R is a C₁-C₄ alkyl, R* is a vinyl, an allyl, a hydride, a hydroxyl, a halogen or a C₁-C₄ alkoxy, and X is a hydride, a hydroxyl, a halogen or a C₁-C₄ alkoxy.

16. The process of claim 10, wherein the cyclosiloxane is selected from the group consisting of trimethylcyclotrisiloxane, tetramethylcyclotetrasiloxane, hexamethylcyclohexasiloxane, heptamethylcycloheptasiloxane, and octakis(dimethylsiloxy)T8-silsesquioxane.
17. The process of claim 10, wherein the cyclosiloxane is pentamethylcyclopentasiloxane and the crosslinking group is a dihydroxyhexasiloxane.
18. The process of claim 10, wherein the molar ratio of cyclosiloxane to crosslinking group is greater than 1:1.
19. The process of claim 10, wherein the cyclosiloxane and crosslinking group are contacted under condensation reaction conditions in the presence of a catalyst.
20. The process of claim 10 wherein the polycyclosiloxane network composition is a thermoset composition.
21. The polycyclosiloxane network of claim 1 or 2 wherein the network is a thermoset composition.